IOWA HIGHWAY RESEARCH BOARD (IHRB)

Minutes of January 25, 2013

Regular Board Members Present

A. Abu-Hawash
P. Assman
J. Berger
V. Dumdei
R. Fangman
R. Knoche
K. Mayberry
S. Okerlund
D. Schnoebelen
E. Steffensmeier
W. Weiss
T. Wipf
B. Younie

Alternate Board Members Present

K. Jones
D. Miller for J.D. King
P. Mouw
D. Sprengeler

Members with No Representation

R. Kieffer

Secretary - M. Dunn

Visitors

Vanessa Goetz	Iowa Department of Transportation
Lori Pflughaupt	Iowa Department of Transportation
Linda Narigon	Iowa Department of Transportation
Scott Schram	Iowa Department of Transportation
Nicole Fox	Iowa Department of Transportation
John Dostart	Iowa Department of Transportation
Leighton Christensen	Iowa DOT Library
Brent Phares	Iowa State University/CCEE
Shauna Hallmark	Iowa State University/InTrans
David Lee	University of Iowa
Rita Knutson, Mayor	City of Rowley, Iowa
Max Grogg	FHWA Iowa Division
Brian Keierleber	Buchanan County

The meeting was held at the Iowa Department of Transportation Ames Complex, Materials East/West Conference Room, on Friday, January 25, 2013. The meeting was called to order at 9:00 a.m. by Chairperson Ahmad Abu-Hawash with an initial number of 13 voting members/alternates at the table.

Agenda

Changes were made to the Agenda.

- ✓ Add implementation discussion to agenda item #4.

Minutes

Motion to approve Minutes from the December 6, 2012 meeting with one correction:

- ✓ Change time of meeting to pm instead of am.

1st by J. Berger. 2nd by W. Weiss.
Motion carried with 13 Aye, 0 Nay, 0 Abstaining.

*****One member joined the table. Total voting members = 14.**

PROPOSAL "Biofuel Co-Product Use for Pavement Go-Materials Stabilization: Phase II, Comprehensive Laboratory Evaluation & Characterization and Field Demonstration, Halil Ceylan, ISU/InTrans, ($167,967)

BACKGROUND

Bio-based energy productions derived from agricultural biomass is often advocated as a significant contributor to possible solutions to our need for a sustainable transportation fuel. Of the 50,000 square miles of land in Iowa, approximately 20,000 square miles are used in agriculture. Iowa ranks first in the nation in the production of ethanol, second in the production of biodiesel and third overall in wind energy capacity. Iowa accounts for over 30 percent of all U.S. ethanol production and over 25 percent of U.S. biodiesel production, and leads the nation in production of raw biomass as well. Iowa is considered to be uniquely positioned to become the renewable energy capital of the world 4 (http://www.iowalifechanging.com/Business/renewable_energy.html). Thus, it is important to find sustainable and beneficial uses of resulting co-products from the biofuel production that adds value to these industries and maximizes their cost-effectiveness.

OBJECTIVES

The proposed research is a follow-up investigation of the IHRB research project entitled "Biofuel Co-product Uses for Pavement Geo-materials Stabilization". The objectives of this proposed Phase II research are to gain a deeper understanding of how BCP-soil stabilization works for different soil types and under a variety of conditions encountered in the field before this technology can be put into practice successfully. This research also seeks to address the potential challenges and issues that could arise with the introduction of a new soil stabilizer in the field. The specific objectives are:

- Evaluate the effect of BCP addition on strength performance for a wide range of soils encountered in Iowa
- Evaluate the durability (moisture sensitivity and freeze-thaw condition) of BCP treated soils
- Evaluate the effect of BCP addition to soils on environment
- Characterize the microstructure of BCP-soil mixture to better understand the mechanism of BCP soil stabilization
- Establishing a laboratory test protocol for mixture design and testing procedures for BCP stabilized soil
- Execute a field demonstration project using the developed BCP-soil stabilization technology

Our industry partners, Stine Seed Company of Iowa and PLET (Canada) have agreed to provide biomass-derived lignin samples in bulk for both the extensive lab characterization study as well as field demonstration.

Tasks:

1. Synthesize worldwide background literature on the use of non-traditional additives for soil stabilization and the potential issues, challenges, and barriers encountered during field application
2. Develop and implement a comprehensive laboratory test program for extensive characterization of BCP treated soils
3. Extensive analysis of laboratory test data to compare and evaluate the BCP treatment on soils and make recommendations for field implementation
4. Develop and implement a field demonstration project for BCP soil stabilization on a test strip to identify and address challenges associated with BCP subgrade construction practice
5. Develop draft mix design and test procedures for BCP stabilized soil

6. Final Report

DISCUSSION

B. Keilieber: The lack of fly ash availability is an issue for use as a base stabilizer, The test area is a county road in a small community with 70 vehicles per day. The plan is to chip seal the surface when the project is complete.

C: It would be more interesting to see the results of a non-chipped section. This would be more useful to counties

There was discussion regarding the need for longer test sections. 15 feet was not considered long enough to achieve uniformity given common construction procedures. The project team was requested to make the test sections long enough to provide a valid test of the materials in the field constructed state and to consider the transition zones between sections. The project team was also directed to include a cost evaluation for use of this material.

Motion to Approve by R. Younie. 2nd by J. Berger.
Motion carried with 14 Aye, 0 Nay, 0 Abstaining.

FINAL REPORT *TR-624, Development of Quality Standards for Inclusion of High Recycled Asphalt Pavement Content in Asphalt Mixtures*, David Lee, University of Iowa, ($150,000)

OBJECTIVE
The objective of this research is to examine the effects of different methods of RAP stockpile fractionation on the volumetric mix design properties of high-RAP content surface mixes while meeting all specified criteria for standard HMA mix designs.

BENEFIT
Increasing the amount of RAP materials used in low-volume, surface course mixtures will substantially improve the long-term sustainability of the transportation network in Iowa. The 300,000 ESAL mixture designed in this study is applicable to a majority of the local, city road network as well as a significant portion of the rural, farm-to-market road networks. High-RAP content mix designs would decrease the cost of maintaining and resurfacing these networks because the increased use of RAP materials significantly reduces the amount and cost of virgin aggregate and asphalt binder needed by the contractor to produce the asphalt mixture, thereby decreasing the amount of aggregate that must be quarried and the amount of oil that must be purchased. The percentage of savings in material cost should be equal to the amount of RAP material used in the mixture.

Motion to Approve by P. Assman. 2nd by V. Dumdei.
Motion carried with 14 Aye, 0 Nay, 0 Abstaining.

Implementation Discussion:
The results of the project show that use of a higher RAP content is possible with fractionation, but further research is needed before it can be fully implemented. There is a need to move from the

liquid binder testing to mixture performance testing. Phase II research will address this issue. A proposal for Phase II will be presented to the IHRB at the February meeting.

New DOT Organizational Structure for Research

Mark Dun briefly discussed the new organizational structure for Research at the Iowa DOT. Research is no longer in the Highway Division. The new Office of Research and Analytics, directed by Peggi Knight, is under the new Performance and Technology division, which is headed by John Selmer. Sandra Larson is now Director of the Systems Operations Bureau in the highway Division, which includes Maintenance, Traffic and Safety, and Traffic Operations.

TRB Recap Discussion

Mark Dunn, Wade Weiss, Leighton Christensen, Bob Younie, Vanessa Goetz, Scott Schram, Ahmad Abu-Hawash, and Linda Narigon all shared some thoughts from their attendance at the TRB annual meeting in January.

NEW BUSINESS

- ✓ Next County Focus Group meeting, February 28, 2013.
- ✓ Call for Research topics coming out soon. Using the web this time for topic submittal.

ADJOURN

Motion to Adjourn by B. Younie. 2nd by R. Knoche.
Motion carried with 14 aye, 0 nay, 0 abstaining.

The next meeting of the Iowa Highway Research Board will be held Friday, February 22, 2013, in the East/West Materials Conference Room at the Iowa DOT. The meeting will begin promptly at 9 a.m.

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Mark J. Dunn, IHRB Secretary